Homework 01

Instructions: Upload LEGIBLE, COMPLETE solutions to Gradescope before 11:59pm on 10 September 2021.

1. Compute the vector $\mathbf{u}$ represented by the directed line segment from $A = (1, 3, -2)$ to $B = (-1, 2, 1)$.

2. Let $\mathbf{u} = \langle -1, 2, 2 \rangle$, $\mathbf{v} = \langle 3, -2, -1 \rangle$, and $c = -5$.

    (a) Compute the sum $c\mathbf{u} + \mathbf{v}$.

    (b) Compute the difference $\mathbf{v} - \mathbf{u}$.

    (c) Compute the magnitudes $|\mathbf{u}|$ and $|\mathbf{v}|$.

    (d) Compute the dot product $\mathbf{u} \cdot \mathbf{v}$.

    (e) Compute the angle θ between $\mathbf{u}$ and $\mathbf{v}$.

    (f) Compute the cross product $\mathbf{u} \times \mathbf{v}$.

    (g) Compute the area of the parallelogram determined by $\mathbf{u}$ and $\mathbf{v}$.